HEART DISEASE &
STROKE PREVENTION PROGRAM
UTAH DEPARTMENT OF HEALTH

Acute Stroke Care in Utah Hospitals, 2007: Progress and Opportunities

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Introduction

Stroke is the third leading cause of death in Utah and a major and costly cause of disability.[1] During the years 2001-2005, nearly 3,000 people were hospitalized annually in Utah for an acute stroke at an average cost of $46 million per year. Of those 65 years or older who survive an acute stroke, 30% are unable to walk without some assistance.[2]

Research studies have shown that treatment of acute ischemic stroke with the thrombolytic agent t-PA can improve outcomes, but only if given within three hours of symptom onset. Since this research has been published, many hospitals and health systems in Utah and surrounding states have made special efforts to develop formal stroke centers and to reach stroke victims promptly. Protocols and procedures have been developed to ensure that stroke patients receive the necessary diagnostic tests to be considered for t-PA therapy within the three-hour window. Because of the very tight time constraints, some have implemented telemedicine for stroke evaluation and treatment in Emergency Departments (ED). A Utah Stroke Task Force has been assembled to coordinate overall systems of care for acute stroke statewide.

This report summarizes the findings from a 2007 survey of Utah hospitals conducted by the Utah Department of Health Heart Disease and Stroke Prevention Program and the Utah Stroke Task Force Acute Care Subcommittee to assess the capabilities and needs of Utah hospitals to ensure all patients receive the best care available promptly.

Methods

Members of the Acute Care Subcommittee of the Utah Stroke Task Force reviewed surveys conducted in other states and designed 25 questions to be included in an electronic online survey format (Appendix A). Emergency Department managers at all Utah hospitals were invited to participate by e-mail and were asked to reply within two weeks. Subsequent phone calls and e-mails were sent by task force members to encourage responses. Responses were analyzed overall and stratified by hospital size based on number of beds. Hospitals with fewer than 100 beds were classified as small and all remaining hospitals were classified as large. In addition, there are 16 frontier counties (with six or fewer persons per square mile) in Utah. Eight responding hospitals located in these frontier counties were identified and further compared to those located in non–frontier counties.

Results

A total of 30 of 44 hospitals completed the survey for a response rate of 68%. Nineteen were classified as small hospitals, 11 were large and eight were in frontier counties. The median bed size of all responding hospitals was 43.

Acute diagnostic imaging and laboratory support for stroke diagnosis were widely available within 45 minutes on a 24-hour a day/7 days a week (24/7) basis in both small and large hospitals. (Table 1) Of the hospitals with t-PA in stock, 52.2% reported using t-PA one or more times for stroke within the past six months. Of those using t-PA within the past six months, the median number of treatments was two. Of the frontier hospitals, only one reported using t-PA at least once in the past six months.

Of the hospitals surveyed, 60% reported having stroke protocols in place in the ED. Large hospitals were more likely than small ones to have ED stroke protocols in place. (Table 2) One-quarter of responding hospitals reported stroke care protocols covering care beyond the ED. Of the frontier hospitals, three reported having the three basic resources for stroke diagnosis and treatment: ED protocols for stroke, 24/7 diagnostic capability and t-PA in stock. A total of six hospitals reported having telemedicine for stroke, and all had administered t-PA within the previous six months. Of the non-urban telemedicine hospitals, all had ED protocols, 24/7 diagnostic capability, and t-PA in stock.

Most hospitals did not report having a specific tracking system for stroke care and quality improvement. (Table 3) However, two of six hospitals with telemedicine reported use of stroke tracking systems, such as Get With The Guidelines (GWTG) from the American Stroke Association.

At the time of the survey, two of the large hospitals were certified as stroke centers and two reported they planned to seek certification as a stroke center in the future. As of July 2007, there were four certified stroke centers. A map of the stroke treatment areas in Utah is provided in this report. (Appendix B)

Table 1. Stroke Diagnostic and Treatment Resources in Utah Hospitals by Hospital Size, 2007 (N=30 hospitals)

	Overall State Average N=30*	Small hospitals (<100 beds) N=19*	Large hospitals (≥ 100 beds) N=11*
Capability to perform and interpret CT/MRI within 45 minutes, 24/7	83.3% (25 of 30)	84.2% (16 of 19)	81.8% (9 of 11)
Capability to provide lab services within 45 min 24/7	96.7% (29 of 30)	94.7% (18 of 19)	100.0% (11 of 11)
t-PA stocked for stroke treatment	90.0% (27 of 30)	84.2% (16 of 19)	100.0% (11 of 11)
Percent using t-PA 1 or more times in last 6 months	52.2% (12 of 23)	46.7% (7 of 15)	62.5% (5 of 8)
Use of NIH Stroke Scale	73.3% (22 of 30)	63.2% (12 of 19)	90.9% (10 of 11)
Stroke Unit present	13.3% (4 of 30)	0.0% (0 of 19)	36.4% (4 of 11)

*Not all participants responded to all questions

Table 2. Stroke Protocols in Place in Utah Hospitals by Bed Size, 2007 (N=30)

	Overall State Average N=30*	Small hospitals (<100 beds) N=19*	Large hospitals (≥ 100 beds) N=11*
ED stroke protocol in place	60.0% (18 of 30)	57.9% (11 of 19)	63.6% (7 of 11)
% protocol includes telemedicine	25.0% (6 of 24)	33.3% (5 of 15)	11.1% (1 of 9)
Stroke transfer protocol in place	50.0% (15 of 30)	63.2% (12 of 19)	27.3% (3 of 11)
Stroke receiving protocol in place	23.3% (7 of 30)	5.3% (1 of 19)	54.5% (6 of 11)
Diversion protocol for stroke patients	23.3% (7 of 30)	21.1% (4 of 19)	27.3% (3 of 11)
Stroke protocols beyond ED in place	26.7% (8 of 30)	21.1% (4 of 19)	36.4% (4 of 11)

*Not all participants responded to all questions

Table 3. Use of Stroke Registries and QI Tools in Utah Hospitals, 2007

	N	%
Data collected to track stroke care	8 of 30	26.7%
Of those, number ever using GWTG	5 of 8	62.5%

Table 4. Information Requested by Responding Hospitals

	N
Developing protocols	15
Get With The Guidelines	13
NIH Stroke Scale	12
QI for stroke care	12
Staff education	10
Telemedicine/telestroke	8
Inter-hospital agreements	5
Developing a stroke center	2

Many of the participating hospitals were interested in information about stroke resources including the National Institutes of Health (NIH) Stroke Scale and stroke care resources like Get With The Guidelines. (Table 4)

Several hospitals have addressed regional or inter-hospital coordination of care for acute stroke. Fifteen hospitals reported that they had developed inter-hospital transfer agreements for stroke patients. Of the hospitals lacking 24/7 diagnostic capability, only one of three reported that protocols were in place to divert acute stroke cases to other facilities.

Limitations

Only 30 of the 44 Utah hospitals responded. Survey findings were self-reported and no effort was made to verify responses. In responding to questions about the use of t-PA in the past six months, no information was available to ascertain how many cases had arrived within three hours of symptom onset or how many were actually eligible for t-PA based on standard criteria.

Conclusions

Utah hospitals have made remarkable progress in developing systematic acute stroke care. The percentage of acute ischemic stroke patients receiving t-PA increased from 0.7% in 2001 to 1.5% in 2005 according to statewide hospital discharge data.[1] The survey found that stroke protocols were in place in the EDs of most hospitals. The efforts are reflected in the increase in t-PA treatment in Utah. The survey also showed the need for coordinated stroke care, particularly for hospitals located in frontier counties. Several hospitals surveyed already have inter-hospital agreements in place. Stroke telemedicine support was reported by six hospitals, of which three were located in frontier counties.

The survey identified several important opportunities to improve stroke care. Many hospitals expressed an interest in developing improved processes, including inpatient protocols and quality improvement activities directed to stroke. Utah's certified stroke centers will play a very important role in guiding other hospitals to implement stroke protocols. In 2004, nearly one-third of acute ischemic stroke patients were admitted to a stroke center.[1] And in 2005, nearly 40% of eligible acute ischemic stroke patients admitted to certified stroke centers received t-PA. Using Get With The Guidelines stroke registries and other tracking systems, certified stroke centers can reach out to other hospitals across the state to share their experience and expertise.

After reviewing the survey findings, the Utah Stroke Task Force Acute Care Subcommittee identified the five priority activities shown in Table 5. Significant treatment barriers exist outside the hospital setting, including lack of patient awareness of signs and symptoms, lack of emergency medical services protocols to evaluate and notify hospitals about possible stroke victims during transport, and poor information about time of symptom onset.[4] Nonetheless, this survey identified opportunities to improve stroke care in hospital settings across the state. Responding to the needs identified in the survey will be a further step toward reducing morbidity and mortality from stroke across Utah.

Table 5. Priority Activities for the Utah Stroke Task Force to Improve Stroke Care

1. Provide a summary report of the survey to all Utah hospitals.
2. Provide specific information about stroke registries and certification to hospitals upon request.
3. Develop a workshop to enable teams from outlying hospitals to develop their own stroke protocols for emergency care and evaluation.
4. Prepare a map of Utah hospitals showing stroke resources, including stroke certification status, stroke telemedicine and/or availability of 24/7 CT, stroke protocols, and t-PA in stock.
5. Offer technical assistance to small, outlying hospitals to develop stroke transfer policies and protocols.

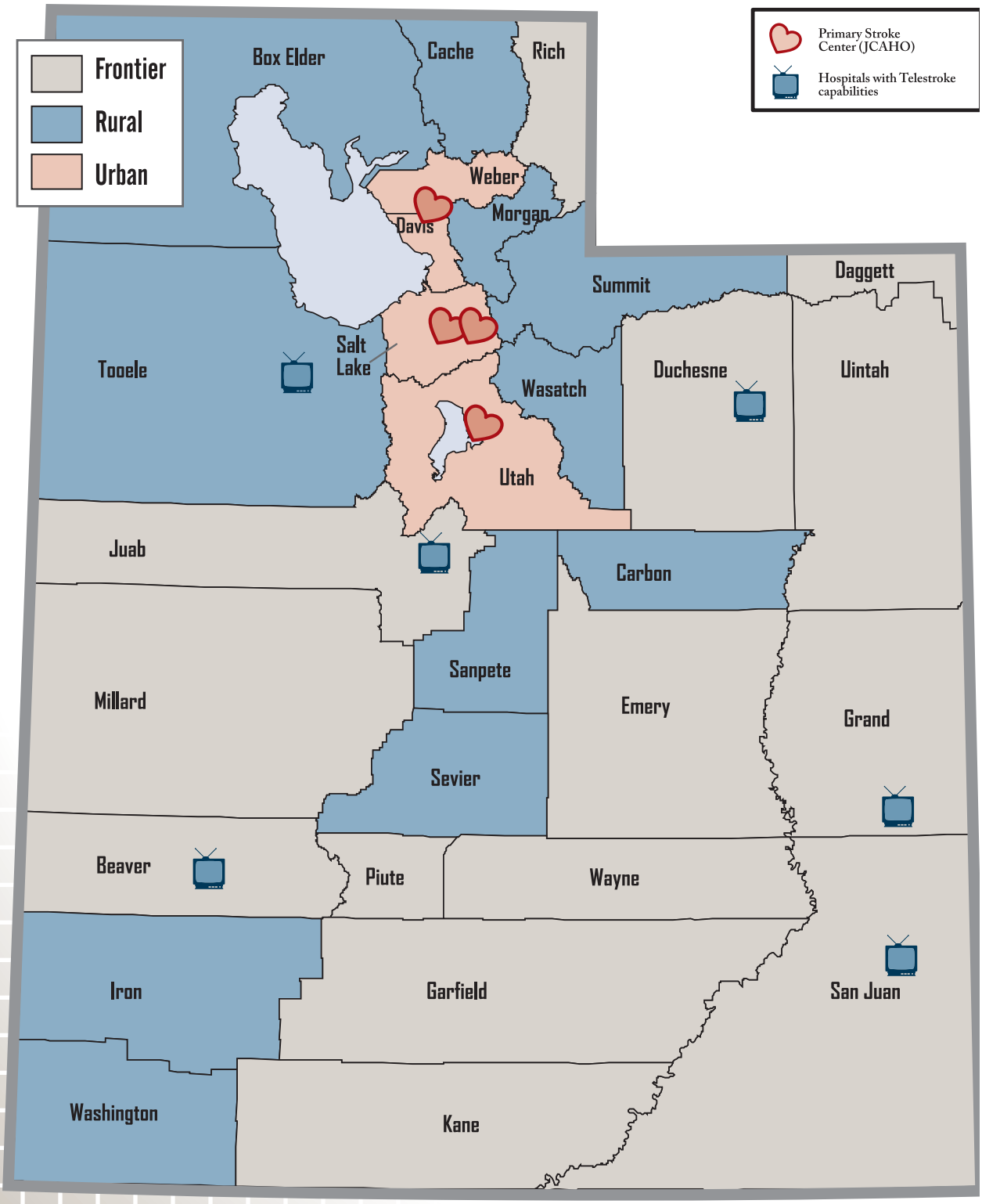
Appendix A
Questions from Online Survey

1) Does your hospital have written Emergency Department care protocols (standing orders) for acute stroke treatment?
2) If yes, does the Emergency Department protocol include telemedicine?
3) Does the hospital have capability to perform and interpret either a head CT or a brain MRI within 45 minutes, 24/7?
4) Does the hospital have the capability to provide laboratory services and results within 45 minutes, 24/7?
5) If yes, please check which laboratory services can be done within 45 minutes.
6) Does the hospital currently stock t-PA (Alteplase) for IV acute stroke treatment?
7) If yes, list the number of times t-PA was administered for acute stroke treatment during the past six months.
8) If yes, check all that apply.
9) Does the hospital have written care protocols for management of acute stroke patients beyond the Emergency Department?
10) If yes, check all conditions that apply to the protocols.
11) Does the hospital have a unit designated for stroke patients?
12) If yes, list the number of stroke beds.
13) Does the hospital use the National Institutes of Health Stroke Scale (NIHSS) for patient assessment?
14) Does your hospital have a written protocol for transferring acute stroke patients to another hospital?
15) If yes, check all conditions that apply to the protocols.
16) Does your hospital have a written protocol for diverting acute stroke patients to another hospital?
17) If yes, check all conditions that apply to the protocol.
18) Does your hospital have a written protocol or system for receiving transferred patients from another hospital?
19) If yes, check all conditions that apply to the protocol.
20) Does your hospital have a database or system to collect data and to track quality improvement activities related to the stroke program?
21) Does your hospital have a strategic plan for becoming a certified stroke center?
22) Would your hospital like to have more information about:
23) Hospital name
24) Hospital location
25) Number of beds in hospital

Appendix B
Map of Stroke Centers

Stroke Treatment Areas In Utah

By County



Appendix C
Resources

Primary Stroke Centers (use Get With The Guidelines-stroke)

University Stroke Center
50 North Medical Drive, SLC (801) 587-9935

LDS Hospital
8th Avenue & C Street, SLC (801) 408-1100

McKay Dee Hospital
4401 Harrison Blvd., Ogden (801) 387-2800

Utah Valley Regional Medical Center
1034 North 500 West, Provo (801) 357-7850

Hospitals with Telestroke Capabilities

Uintah Basin Medical Center
250 West 300 North, Roosevelt (435) 722-4691

Mountain West Medical Center
2055 North Main Street, Tooele (435) 843-3600

Allen Memorial Hospital
719 West 400 North, Moab (435) 259-7191

Beaver Valley Hospital
1109 North 100 West, Beaver (435) 438-7100

Central Valley Hospital
48 West 1500 North, Nephi (435) 623-3000

San Juan Hospital
364 West 100 North, Monticello (435) 587-2116

Hospitals Using Get With the Guidelines-Stroke

American Fork Hospital
170 North 1100 East, American Fork (801) 855-3300

Dixie Regional Medical Center
1380 East Medical Center Drive
St. George (435) 251-1000

Stroke Resources

Utah Department of Health
Heart Disease and Stroke Prevention Program
PO Box 142107
SLC UT 84114-2107 1-866-88-STROKE

American Heart Association
44 South 500 East
SLC UT 84105 (801) 424-3838

National Stroke Association 1-800-STROKES

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References

1. Utah Heart Disease and Stroke Prevention Program. "The Impact of Heart Disease and Stroke In Utah: 2007," Salt Lake City, UT: Utah Department of Health 2007
2. American Heart Association. "Heart Disease and Stroke Statistics — 2007 Update." Dallas, Texas: American Heart Association; 2007
3. Moser DK, Kimble LP, Alberts MJ, et al. "Reducing delay in seeking treatment by patients with acute coronary syndrome and stroke: a scientific statement from the American Heart Association council on cardiovascular nursing and stroke council," Circulation 2006;114;168-182